

Serial No.: 10/823,674
Docket No.: 102.1024
Amendment dated May 9, 2008
Reply to the Office Action of February 27, 2008

REMARKS

Introduction

Applicants note with appreciation the Examiner's indication that references cited in the Information Disclosure Statement of February 28, 2006 and September 18, 2007 have been considered.

Upon entry of the foregoing amendment, claims 1-18 and 20-21 are pending in the application. Claims 17 and 20 have been amended. Claim 19 has been canceled. No new matter is being presented. In view of the following remarks, reconsideration and allowance of all the pending claims are requested.

Rejection under 35 USC §102

Independent claim 17 has been rejected under 35 U.S.C. §102(b) as being anticipated by Byung-Tae Choi et al. (hereinafter "Choi"). Applicants traverse this rejection for at least the following reasons.

Independent claim 17 has been amended to include limitations of claim 19. Choi does not disclose, teach or suggest all of the limitations recited therein. In particular, Choi does not teach or suggest, among other things, "discontinuous area between image blocks." Although Choi discloses an overlapped block motion compensation (OBMC) technique to reduce the block artifacts, Choi fails to show the Applicants discontinuous area as recited in the amended independent claim 17. Accordingly, Applicants submit the Examiner's specific comments in the Office Action, at Page 2, left column, lines 17-22 do not substantiate the anticipation rejection of claim 1 based on Choi.

Accordingly, based on at least the points provided above it is respectfully submitted that since Choi does not teach or suggest all of the elements set forth in claim 17, claim 17 is patently distinguishable over Choi, and withdrawal of this rejection and allowance of the claim are earnestly solicited.

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Rejection under 35 USC §103

Claims 1, 3-9, 11-16 and 18-21 have been rejected under 35 U.S.C. §103(a) as being anticipated by Choi and G. Heising et al. (hereinafter "Heising"). Applicants traverse this rejection for at least the following reasons.

Independent claims 1 and 9:

With respect to independent claims 1 and 9, the Examiner asserts on Page 4 of the Office Action that Choi does not disclose the following:

"1) allocating a predetermined weight to the first and the second interpolation pixels according to relative locations where the first and second interpolation pixels are interpolated, among the current blocks to be interpolated;

2) a motion analyzer to analyze the estimated motion vectors of the current block and the peripheral blocks, and to determine whether the current block and the peripheral blocks are continuous;

3) a final interpolation pixel selector to select according to the result determined at the motion analyzer."

Applicants agree with the Examiner on this point, but disagrees that Heising does teach these points, as asserted by the Examiner on the bottom of Page 4 through the first paragraph of Page 5 of the Office Action.

In particular, Heising does not teach or suggest "allocating a predetermined weight to the first and the second interpolation pixels according to relative locations where the first and second interpolation pixels are interpolated, among the current blocks to be interpolated," despite the Examiner's assertion to the contrary. In support of that contention, the Examiner cites Page 95 of Heising, left column at lines 15-21 as well as Fig. 2a and Equation 3. Yet inspection of the afore-mentioned lines 15-21 reveals it is a reference to Equation 2, dealing with the intensity values of frames in "warp" mode (as opposed to OBMC mode). Likewise, Equation 2 is a weighting function for OBMC prediction and Equation 3 is the OBMC analog of Equation 2.

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Neither does Heising teach or suggest “a motion analyzer to analyze the estimated motion vectors of the current block and the peripheral blocks, and to determine whether the current block and the peripheral blocks are continuous.” In support of that proposition, the Examiner cites Page 95, right column, lines 29-34 and Equation 4. Yet inspection of this passage in Heising reveals a reference to a vector motion smoothing function utilizing a Lagrange multiplier. Equation 4 also does not support the Examiner’s assertion.

Finally, Heising does not teach or suggest “a final interpolation pixel selector to select according to the result determined at the motion analyzer.” In support of that contention, the Examiner cites Page 95, right column, lines 35-36, as well as Page 99, right column, lines 12-18 and Page 100, left column, first paragraph. The first citation is another reference to the vector motion smoothing function utilizing a Lagrange multiplier. The reference on Page 99 was to higher luminance values and the reference to Page 100 was a general statement on the effectiveness of combining warping with OBMC.

Therefore, on the basis of the Examiner’s accurate statement with respect to Choi’s limitations, quoted above, and further, based on the lack of support provided by Heising, Applicants submit that neither Choi nor Heising, separately or in combination, teach or suggest pending claims 1 and 9. At least on the basis of the foregoing points, claims 1 and 9 are patently distinguishable over Choi in view of Heising and withdrawal of this rejection and allowance of the claims are earnestly solicited.

Dependent claims 3-8 and 11-16:

The Examiner also rejected claims 3-8 and 11-16, on the basis of 35 U.S.C. 103 over Choi in view of Heising. With respect to claims 3-8, it is respectfully submitted that for at least the reason that these claims depend from independent claim 1, which is allowable for at least the reasons provided above, and therefore contain each of the features as recited in claim 1, dependent claims 3-8 are also allowable over Choi in view of Heising.

With respect to claims 11-16, it is respectfully submitted that for at least the reason that these claims depend from independent claim 9, which is allowable for at least the reasons provided above, and therefore contain each of the features as recited in claim 9, dependent

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claims 11-16 are also allowable over Choi in view of Heising.

Dependent claims 18-21:

The Examiner also rejected claims 18-21, on the basis of 35 U.S.C. 103 over Choi in view of Heising. With respect to claim 18, the Examiner asserts on Page 10 of the Office Action that Choi does not disclose the following:

“1) allocating a predetermined weight to the first and the second interpolation pixels according to relative locations where the first and second interpolation pixels are interpolated, among the current blocks to be interpolated;

2) a motion analyzer to analyze the estimated motion vectors of the current block and the peripheral blocks, and to determine whether the current block and the peripheral blocks are continuous;

3) a final interpolation pixel selector to select according to the result determined at the motion analyzer.”

Applicants agree with the Examiner on this point, but disagrees that Heising does teach these points, as asserted by the Examiner on Page 11 of the Office Action.

In particular, Heising does not teach or suggest “allocating a predetermined weight to the first and the second interpolation pixels according to relative locations where the first and second interpolation pixels are interpolated, among the current blocks to be interpolated,” despite the Examiner’s assertion to the contrary. In support of that contention, the Examiner cites Page 95 of Heising, left column at lines 15-21 as well as Fig. 2a and Equation 3. Yet inspection of the afore-mentioned lines 15-21 reveals it is a reference to Equation 2, dealing with the intensity values of frames in “warp” mode (as opposed to OBMC mode). Likewise, Equation 2 is a weighting function for OBMC prediction and Equation 3 is the OBMC analog of Equation 2. Thus Heising fails to supply or cure the deficiencies of Choi.

Neither does Heising teach or suggest “a motion analyzer to analyze the estimated motion vectors of the current block and the peripheral blocks, and to determine whether the current block and the peripheral blocks are continuous.” In support of that proposition, the Examiner cites Page 95, right column, lines 29-34 and Equation 4. Yet inspection of this

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passage in Heising reveals a reference to a vector motion smoothing function utilizing a Lagrange multiplier. Equation 4 also does not support the Examiner's assertion.

Finally, Heising does not teach or suggest "a final interpolation pixel selector to select according to the result determined at the motion analyzer." In support of that contention, the Examiner cites Page 95, right column, lines 35-36, as well as Page 99, right column, lines 12-18 and Page 100, left column, first paragraph. The first citation is another reference to the vector motion smoothing function utilizing a Lagrange multiplier. The reference on Page 99 was to higher luminance values and the reference to Page 100 was a general statement on the effectiveness of combining warping with OBMC.

Therefore, on the basis of the Examiner's accurate statement with respect to Choi's limitations, quoted above, and further, based on the lack of support provided by Heising, to cure the deficiencies and limitations of Choi, Applicants submit that neither Choi nor Heising, separately or in combination, teach or suggest pending claim 18. At least on the basis of the foregoing points, claim 18 is patently distinguishable over Choi in view of Heising and withdrawal of this rejection and allowance of the claim are earnestly solicited.

Claim 19 has been canceled and therefore it is requested the rejection be withdrawn.

With regard to claim 20, the Examiner refers to Heising, Page 95, right column, lines 29-37. Applicants believe this reference is inapposite. The cited text refers to the "best control point motion vector," which is a reference to warp mode as opposed to OBMC mode. The warp mode predicting avoids discontinuities altogether (Heising, Page 95, left column, lines 5-7). Therefore the Examiner's cited reference cannot satisfy the limitation of claim 20 for "selecting discontinuous areas between blocks."

With regard to claim 21, the Examiner's cited reference is to Heising, Page 96, right column, paragraph 3. But the cited paragraph is only a generalized reference to which technique Heising will perform. But there is no teaching or suggestion of "selectively applying the overlap block motion compensation to non-selected areas of the image blocks to reduce blurring," as required by claim 21.

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Therefore, at least based on the foregoing points, Applicants submit that neither Choi nor Heising, separately or in combination, teach or suggest pending claims 18 and 20-21. At least on the basis of the foregoing points, claims 18 and 20-21 are patently distinguishable over Choi in view of Heising and withdrawal of this rejection and allowance of the claims are earnestly solicited.

Rejection under 35 USC §103

Claims 2 and 10 have been rejected under 35 U.S.C. §103(a) as being anticipated by Choi and Heising and further in view of J. R. Ohm (hereinafter "Ohm"). Applicants traverse this rejection for at least the following reasons.

Claims 2:

With respect to claim 2, it is respectfully submitted that for at least the reason that this claim depends from independent claim 1, which is allowable for at least the reasons provided above, and therefore contains each of the features as recited in claim 1, dependent claim 2 is also allowable over Choi in view of Heising and further in view of Ohm.

Claim 10:

With respect to claim 10, it is respectfully submitted that for at least the reason that this claim depends from independent claim 9, which is allowable for at least the reasons provided above, and therefore contains each of the features as recited in claim 1, dependent claim 2 is also allowable over Choi in view of Heising and further in view of Ohm.

Conclusion

It is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, there being no other objections or rejections, this application is in condition for allowance, and a notice to this effect is earnestly solicited.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided below.

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If any further fees are required in connection with the filing of this amendment, please charge the same to our Deposit Account No. 502827.

Respectfully submitted,

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